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ABSTRACT

A questionnaire survey of a random sample of 415 elementary and secondary teachers in the state of Victoria (Australia) sought to determine how research knowledge is disseminated to educators, what the most effective diffusion routes are, and what impact the knowledge has on educational practice. The researchers distinguished between written and verbal (or spoken) diffusion. Using an eight-point Guttman scale, they constructed indices showing teachers' degree of use of seven selected Australian education journals and nine more publications suggested by respondents. The teachers were also asked about their use of research information and their preferences for "hard," formally-presented knowledge or "soft" information presented in lay language. To measure spoken diffusion, the researchers asked how frequently teachers attended inschool and out-of-school conferences or meetings and how often they participated in research and evaluation activities. Among the authors' conclusions are that Victoria teachers do not read widely and that they prefer "soft" presentations; that written knowledge has little impact on their teaching methods; that they are heavily involved in spoken diffusion of knowledge; and that knowledge diffusion and use differ little between elementary and secondary teachers. (RW)

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Alternative Forms of Communicated Knowledge and Their Effects on Australian Teachers

by

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April 1982

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EA 014 661

Introduction

Much effort has gone into studying the phenomenon of educational knowledge use. The fundamental base of this concern is a need to make dissemination of relevant knowledge to schools more effective, and to increase the efficiency of within school distribution of information which contributes to improved educational administration, curriculum planning and implementation. Evaluators have identified two developments which contribute to the need to understand these mechanisms. First, we are witnesses to a knowledge explosion unparalleled in history. This has contributed to the trend for western societies to change from a goods based to a knowledge based economy (Bagenstos, 1982). Second, there has been a tendency in many western countries to locate more control for educational matters at the school than at the district or state level. This is based on the assumption that a reduction in the gap between decision making and implementation of procedures based on these decisions will lead to more effective practice because of increased teacher commitment. The resultant of the combination of these factors is that teachers and school administrators are being confronted, not only with more knowledge than before, but also with knowledge presented in a variety of forms. Those in schools are being required to process more basic knowledge and to build their curricula around this information, rather than adopting curriculum packages requiring little or no adaptation. This has opened the floodgates in terms of societal expectations of schools. The role of the teacher has expanded dramatically, from classroom tactician to knowledge acquisitor and curriculum developer. The swing to school level decision making has implications for support services for schools and for ongoing teacher education.

For the student of school change of this nature, there are two research bases to assist us understand the new needs of schools and teachers. The

first is the extensive literature on the sociology of knowledge. A branch of this research has grappled with defining what knowledge use means, and relating this criteria to the characteristics of new knowledge and decision making (Caplan et al., 1975; Larsen, 1980; Knott and Wildavsky, 1980; Weiss, 1980). Much of this research has concentrated on individual decision making rather than the examination of knowledge use by groups.

The second research source is literature which has examined knowledge use in education, particularly in schools. Given the emphasis on transferring scientifically based curricula from developer to teachers, it is perhaps not surprising that the American literature has concentrated on fidelity of curriculum implementation. That is, studies have examined teacher use of knowledge in the classroom, where there has been a strong link between directions contained in the curriculum and teacher action. In a broader context, such actions have been called instrumental knowledge utilization (Caplan et al., 1975). Measurement of teacher fidelity has depended on development of checklists of curriculum characteristics and their use in classrooms (Evans and Behrman, 1977). A recent comprehensive review of research has probed deeply behind classroom actions and shown that, for implementation of curriculum to occur, complex changes must take place in teacher attitudes, knowledge and roles (Fullan and Pomfret, 1977). We are also aware, due to the work of Hall and others, that implementation does not occur at once, rather it is a process which accumulates in degree over time (Hall et al., 1975).

Given the recent changes in schools, it now seems necessary to extend our conceptions of knowledge utilization in schools. If teachers are to be in a position to consider an expanded set of resources, it might be asked; "what kinds of knowledge are required?"; "is there a place for research knowledge on teaching and learning?"; "how can decisions at the school level be streamlined?" The more general literature about knowledge use may help us here.

Knowledge Use in Victorian Schools

The general scenario of devolution to school based curriculum control outlined earlier has been a reality in the state of Victoria (Australia) for almost two decades. Primary (elementary) schools in the government system have been issued with centrally developed guidelines for curriculum but not directives and since 1967 government secondary schools have, with the exception of the final year of schooling, been free to devise their total curriculum. The extensive private school system has always enjoyed school level control of curriculum.

Given this, it seemed appropriate to carry out an investigation into various aspects of knowledge use by teachers in Victorian schools. In 1981, we carried out a study which sought information on a range of issues concerned with dissemination and the use of information by principals and practicing teachers. An important aspect of the study was to determine the extent of links between agents outside schools which produced information of potential use to schools and the teachers within those schools. One set of external agents, educational researchers, were keen to determine what impact, if any, their work was having on teacher decision making and school practice. An associated question was; in what ways were these results being diffused? and to what extent were these avenues of diffusion effective?

Conceptualisation of Knowledge Use

Before an analysis of levels of teacher use could be made it was necessary to decide what "use" meant. In addition, it was necessary to determine which modes of knowledge transmission were to be examined. Because of our interest in knowledge created by sources outside the school, two major transmission modes were examined in detail. The first was written information, usually in the form of journal articles, pamphlets and books. The second was verbal information, made available to teachers in conferences, seminars and working groups.

For written information, a set of indices were created to describe our meaning of this form of knowledge use. These were based on teacher acceptance

of knowledge presented in a series of publications, the details of these are described later in this paper. The indices measured the following; level of use, breadth of use, depth of use, academic emphasis and topic research. The conceptualisation of these indices, and the recognition that use is a multidimensional concept is, in our view, a key contribution of this paper to empirical examination of school knowledge utilization.

For verbal information, a further set of indices were developed. These measured the extent of involvement of teachers in various activities which attempted to disseminate scientifically based knowledge to practicing teachers.

Data Base

A sample of teachers were selected using a two stage sampling technique. In the first stage, 96 schools were selected which enabled the sample to reflect the distribution of Victorian schools with respect to level of schooling (secondary, primary), location (metropolitan, non metropolitan) and type (government, non-government). The second stage involved the selection of five teachers in each school who were interviewed in a 45 minute session. During the session, a member of the research team led the teacher group through a structured questionnaire completion exercise. All told, 87 schools agreed to cooperate; this represented a 90 per cent response rate by school.[1]

In total, data were obtained from 415 teachers, 208 secondary and 207 primary. The sampling process enabled us to extrapolate findings to the population of Victorian teachers. We were also able to compare the knowledge use of teachers in different school situations. For this paper, comparisons have been restricted to those between teachers working at the two levels, secondary and primary. We were interested in whether or not one teacher group used new knowledge more than the other, given that there are marked

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[1]The sampling procedures are similar to those outlined in the following publication: Rosier, M. J. and Williams, W. H. The Sampling and Administration of the IEA Science Project in Australia: a Technical Report. Hawthorn, Victoria: Australian Council for Educational Research, 1973.

differences between schools at these two levels in terms of administration, class organisation, and curriculum emphasis. The mere fact that teachers in secondary schools have more time for out of class work than their primary school counterparts during the school day made the comparisons of knowledge use by these two groups an item of interest.

Levels of Use of Written Information

An important item on the questionnaire was a matrix in which teachers indicated the level of use of a series of publications, which represented a cross-section of written materials available to schools in Victoria. These publications represented variations in presentation of educational knowledge along a formal versus informal continuum.

We have reproduced the matrix as Table 1, and included a frequency count of the responses of all teachers for each publication. To illustrate the variation, a short description of three of the publications is necessary. For example, the Australian Journal of Education is a national journal, which publishes refereed articles in a formal scientific style. The articles contain original research, published without major editing or interpretation by the editorial committee. At the other end of the scale, The Educational Magazine is presented in an informal style, and includes articles from a range of sources, some of which may be based on original research. However, these articles are often edited in order to make the findings far easier to absorb than when they had been presented in the original journal. The Educational Age, a weekly presentation of "The Age" newspaper, presents information for teachers in a style similar to the Educational Magazine.

Teachers indicated the impact of these journals by checking the appropriate statement in Column B. The statements in Column B represented a levels of use scale for written information in these publications. Before use in the major data collecting phase, the scale had been checked using a Guttman Scaling technique (Anderson, 1966). In the Guttman analysis, it is possible to determine whether or not a series of apparently logical

Table 1. Levels of Use of Publications (Specified List).

COLUMN A RESEARCH SOURCE	COLUMN B LEVEL OF USE (during the last 12 months)									
	1. I am not aware of this publication.	2. I am aware of this publication but have not read it.	3. I have once or twice browsed through this publication.	4. I occasionally read selected articles from this publication.	5. I regularly read a number of articles from this publication.	6. I often make notes or photocopies of articles from this publication.	7. I often follow up reading from this journal with related reading or discussion.	8. My reading of this journal has considerable influence on my work.	Mean	SD
	1	2	3	4	5	6	7	8		
1. Aust. Journal of Education	51	23	15	9	2	--	--	--	1.89	1.15
2. Curriculum & Research Bulletin	16	12	25	29	16	1	1		3.29	1.39
3. SET: Research Information for Teachers	70	12	8	6	3	--	1	1	1.64	1.21
4. Subject Assoc. Journal (name it)	43	3	2	9	22	7	4	9	3.43	2.48
5. Education News	49	15	16	12	6	1	--	--	2.14	1.38
6. The Educational Magazine	11	7	13	29	35	3	1	1	3.88	1.45
7. Education Age	15	8	10	24	29	6	5	3	3.91	1.77
8.										
9.										
10.										
11.										

Note: Figures in the body of the Table are percentages.
(N=415)

. For each publication listed in Column A, indicate your use of it during the last 12 months by ticking the appropriate statement from Column B. Where more than one statement seems appropriate, tick the one highest on the scale.

. Add to the list in Column A other publications you use in which educational research is discussed. Finally, complete Column B these journals.

hierarchical levels do, in fact, hold in an experimental situation. Using the scaling procedure on empirical data, the extent and nature of deviation from the expected hierarchy can be determined.[2]

The seven publications included in Column A formed the specified list. In addition, teachers were encouraged to list other publications which they had used in work related tasks over the past 12 months, and to indicate the level of use of each of them in Column B. The additions, along with the specified list, formed an extended list. Separate analyses of the use of publications on the specified and extended lists are considered throughout this paper.

In proceeding from level one to level eight in Column B, we thus had an experimentally checked hierarchy of statements which, together, enabled a measure of publication use by teachers to be made. Use is thus synonymous with the level of influence each publication has had on the teacher, in terms of his reading habits and activities which result from these habits. When reporting knowledge utilization of this nature, it is obviously different from that measured using the fidelity perspective. Here, we are concerned more with teacher enrichment, the informing of teachers about issues and developments, some of which may lead to changed classroom practices, but not necessarily. The type of knowledge has been labelled as conceptual knowledge, in that it impinges first and foremost on the user without always leading directly to action (Rich, 1977).

The frequency distributions of responses for the specified list of publications appear in Table 1, along with means and standard deviations. On the eight point scale, the means varied from 3.91 to 1.64. A large proportion of the responses for all seven publications were at levels one and two. This level of response signified that a teacher had not read the publication in the last 12 months. There was a tendency for higher levels of use to be associated with the "softer" publications. Also, journals produced at the state level; The Educational Magazine and Curriculum and Research Bulletin were more likely to have been read than national level journals, such as Education News and Australian Journal of Education.

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[2]The SPSS program Guttman Scale was used in this analysis.

The Education Age had the highest mean level of reading; 3.91. It is somewhat surprising, however, that 23 per cent of all respondents either were unaware of the Education Age, or were aware, but had not read it.

SET--Research Information for Teachers had the lowest mean use level. SET is a recent publication in Australia prepared jointly by the Australian and New Zealand Councils for Educational Research (ACER and NZCER). Eight out of ten teachers had not read a SET article at the time of the data collection phase. This is a finding of particular significance for this study, in that a previous section of this investigation has been concerned with the adoption of SET across Australia. We found that in 1980, 28 per cent of Victorian schools subscribed to SET, and there were over 200 subscriptions sent to private addresses (Owen and Hall, 1981). With this level of subscription in 1980, and similar, if slightly lower school subscriptions in 1981, it might have been expected that more teachers than the proportion indicated in Table 1 would have had access to a SET article. It must be inferred that within school dissemination of SET is not taking place to a large extent in Victorian schools.

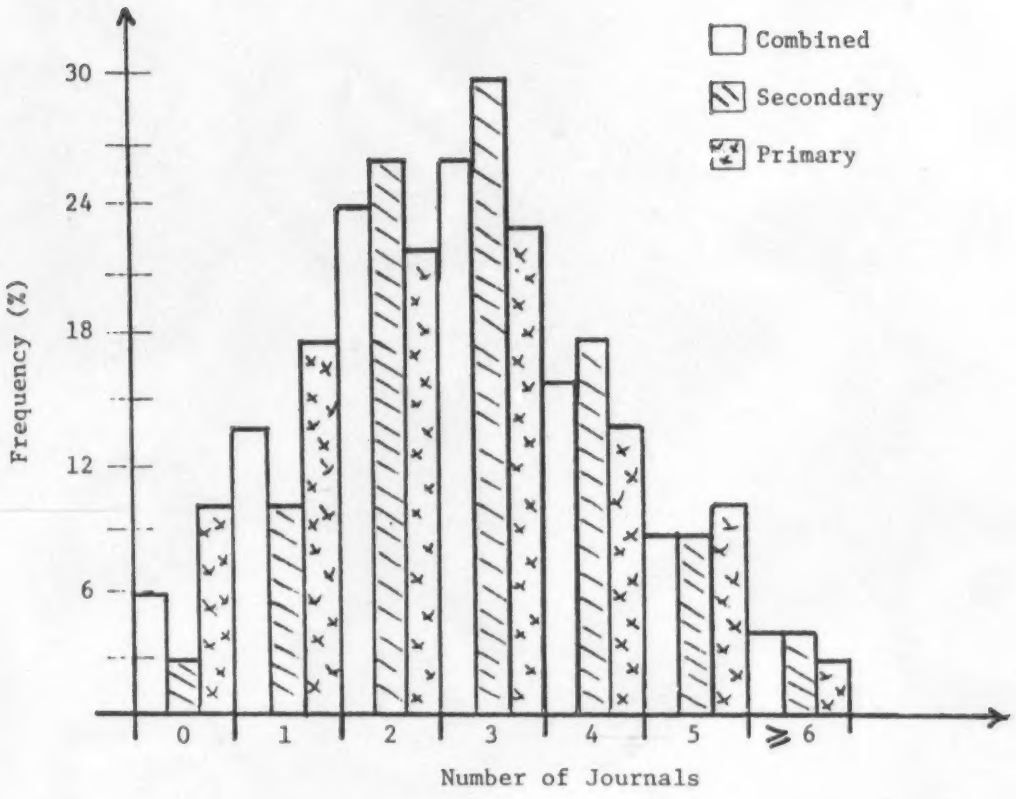
Indices of Use of Written Information

Breadth of Use

The first two of the six indices created from the information in Table 1 measured the breadth of reading habits of the teachers. The first of the two breadth indices (Breadth 1) related to the seven specified publications listed in Table 1.

- Breadth 1 is the number of publications on the specified list which, as a minimum had been at least occasionally read by the respondent over the 12 months period before data collection.

In practice, this meant the number of publications a respondent had marked at level four or higher on the questionnaire item reproduced as Table 1. The decision to include levels 4 or higher was based on the fact that, to have checked any of these levels meant that at least some reading of the publication had taken place. Thus, Breadth 1 was a measure of the total



Teacher Group	Mean	Standard Deviation	t
Combined	2.75	1.48	
Secondary	2.93	1.37	<.01
Primary	2.55	1.57	

Note: t-test between secondary and primary teachers is two-tailed.

N=415, 208 secondary, 207 primary

Figure 1. Breadth 1. Number of Journals 'Received' (Specified List).

impact of the specified list on each respondent during the 12 month period preceding the study.

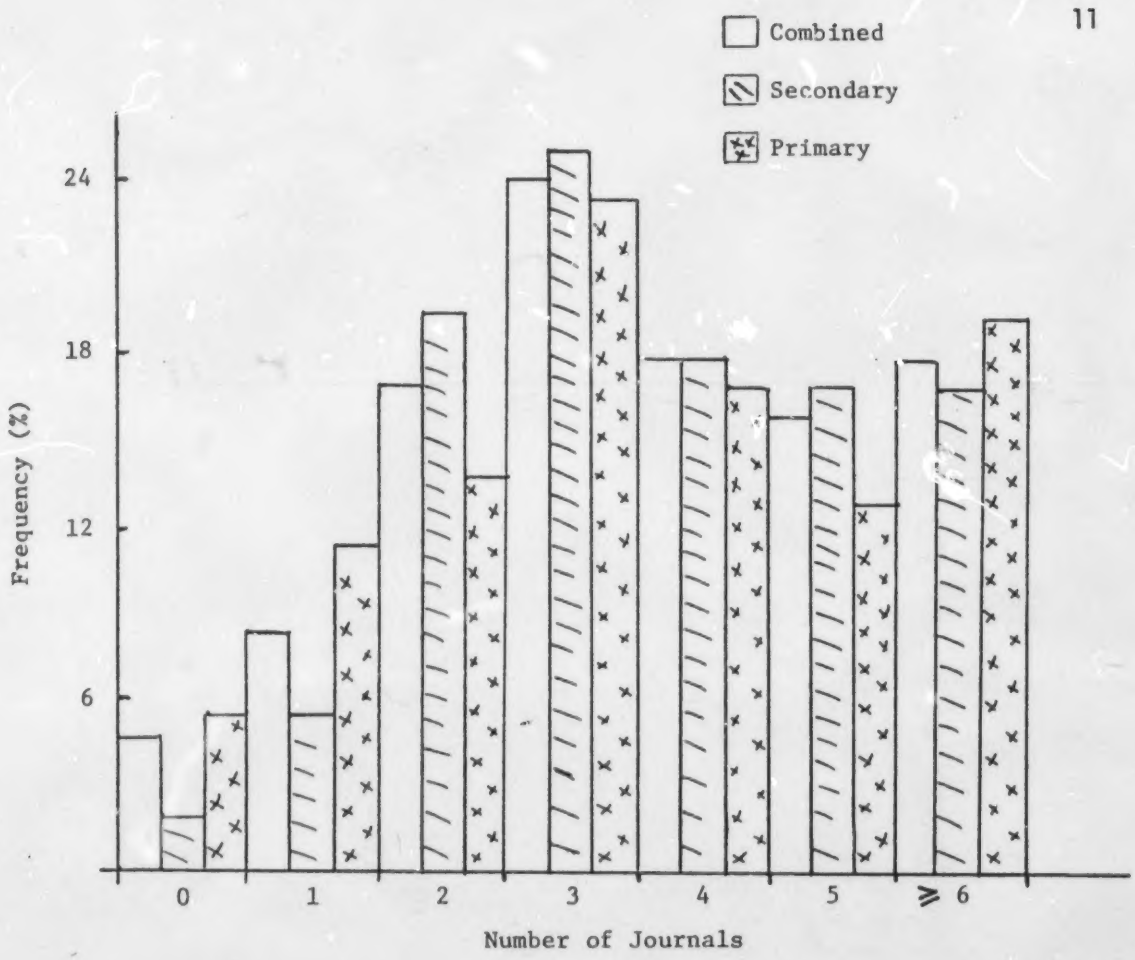
The statistics for Breadth 1 are outlined in Figure 1. In addition to the frequency distribution for all teachers, this distribution is also given for teachers in secondary and primary schools separately. As indicated earlier, it was of interest to determine whether there were different knowledge utilization patterns by teachers in these two school types.

In Figure 1, it is shown that only six percent of all teachers obtained a zero rating on the Breadth 1 scale. Fifty percent of all teachers said they had "received" two or three publications. A few (four per cent) "received" six or seven specified publications.

The breakdown of these data by school type indicates that secondary school teachers were more affected by these publications than their primary school colleagues. A two tailed t-test is significant at the one per cent level. Overall, secondary school teachers "received" an average of three of these publications while primary teachers scored just over 2.50. The spread of responses of primary teachers was somewhat higher than those of teachers in secondary schools.

Breadth of Use of the Extended List of Publications

As indicated earlier, teachers were encouraged to add other educational publications to the specified list during the interview, and to indicate the levels of use for each of the additional titles. A content analysis of the responses of these additions resulted in nine new titles added to the specified list. This created an extended list of 16 publications. Some of the additions were names of journals, such as "The Australian Grade Teacher" and "Interview." Others were more generic in title, such as "Second Association Journal." This allowed for cases when more than one subject association journal was listed (there was already provision for a subject association journal on the specified list). Once the extended list was developed, each respondent was given a score for every publication on the list. If a respondent had not added a listed journal, he/she was given a score of zero for that journal on the extended list.



Teacher Group	Mean	Standard Deviation	t
Combined	3.69	1.98	
Secondary	3.71	1.76	ns
Primary	3.67	2.19	

Note: t-test between secondary and primary teacher is two-tailed

N=415, 208 secondary, 207 primary

Figure 2. Breadth 2. Number of Journals 'Received' (Extended List).

The second index of Breadth was derived from this list.

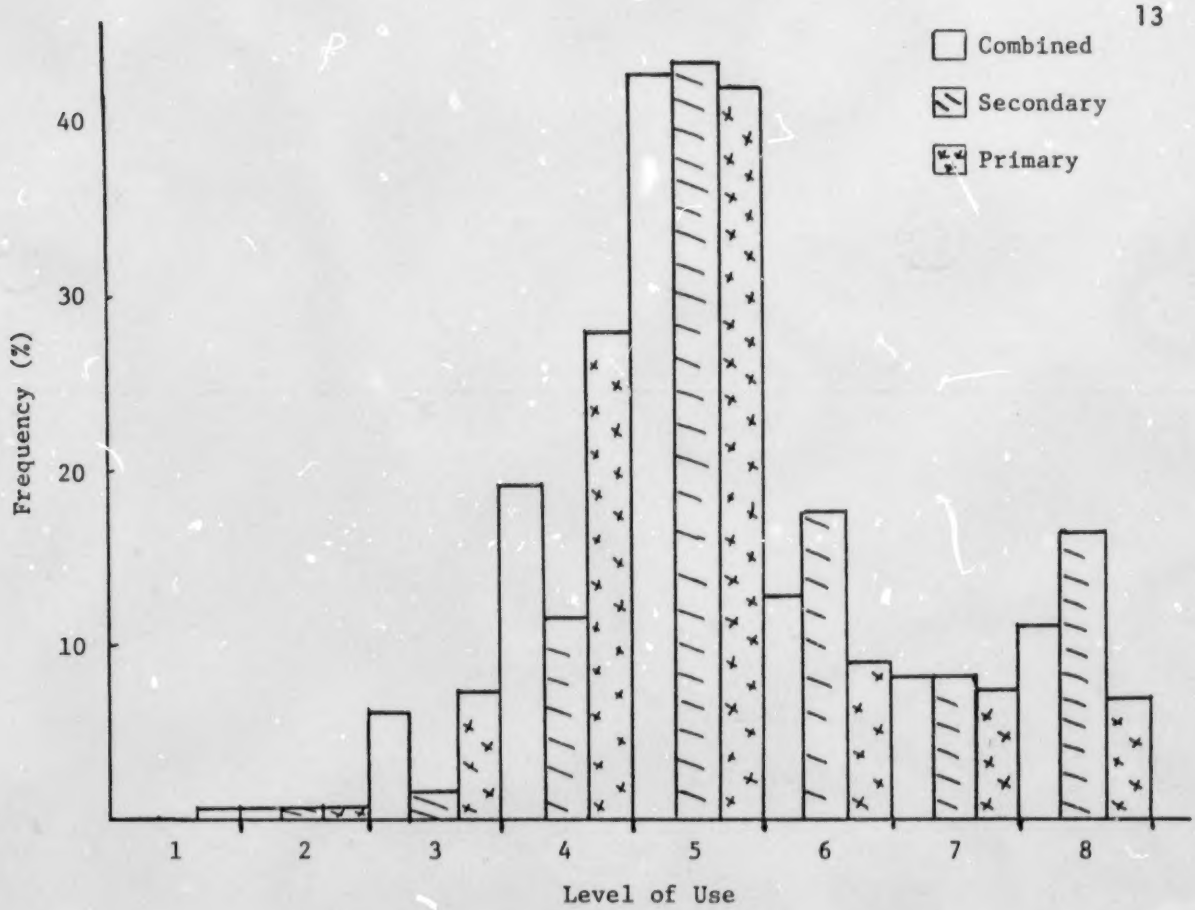
. Breadth 2 is the number of publications on the extended list which, as a minimum had been at least occasionally read by the respondent over the 12 month period before data collection.

In practice, this meant the number of publications a respondent had marked at level four or higher on the questionnaire item reproduced as Table 1. Thus, Breadth 2 was a measure of the total impact of the extended list of publications during the 12 month period preceding the study.

A comparison of the information on Figures 1 and 2 shows that the mean value of "reception" has increased by one due to the addition of teacher nominated journals (from 2.75 to 3.69). There has also been a marked increase in the spread of responses, indicating that teachers added differing numbers of journals to the specified list.

There were fewer teachers who had scores of zero, one, or two on the Breadth 2 index compared with Breadth 1. At the other end of the scale, the proportion of teachers who "received" six or more publications rose from four percent on Breadth 1 to 17 percent on Breadth 2. There were obviously many publications which we had not included on our specified list which were important sources of knowledge to a group of teachers. This increased their score markedly in going from one index to the other.

Perhaps the most striking result in comparing the two indices was that, while there was a significant difference in reception between secondary and primary teachers on the index Breadth 1, no such difference existed on the index Breadth 2. The original imbalance was due, in the main to the publication "subject association journal" which was highly used by secondary teachers, but not by their primary counterparts. The additions to the specified list included a number of publications specifically directed at primary school teachers. The net effect, shown in the null result on Breadth 2, is a "cancelling out" in the extent of reception of publications dervied from the extended list.



Teacher Group	Mean	Standard Deviation	t
Combined	5.28	1.37	
Secondary	5.63	1.34	<.01
Primary	4.94	1.31	

Note: t-test between secondary and primary teachers is two-tailed.

N=415, 208 secondary, 207 primary .

Levels of use specified in Column B of Table 1.

Figure 3. Depth 1. Highest Level of Use (Specified List).

Depth of Use

Two indices of depth of publication reading were also constructed. The first of these indices (Depth 1) related to the seven publications listed in Table 1.

- Depth 1 is the highest level of use indicated by each respondent across all specified publications.

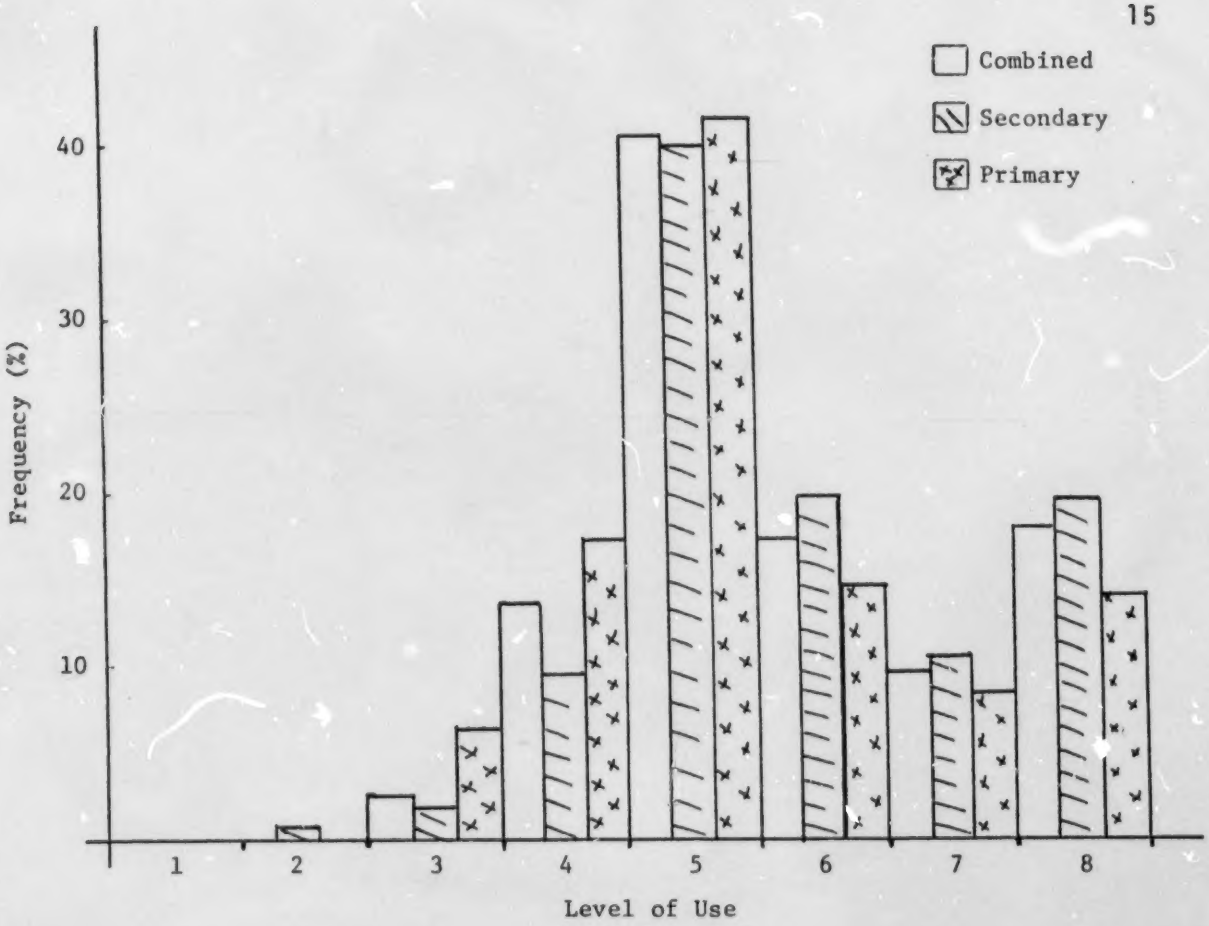
Thus Depth 1 indicated how much impact the single most influential journal had on each teacher. The underlying interest in a measure of depth or intensity was based on an assumption that a teacher may not necessarily read broadly to obtain information to assist his work, but rather prefer to concentrate his attention more narrowly to a single resource.

Statistics for the index Depth 1 are presented in Figure 3. As with the previously reported indices, a frequency count is presented for all teachers, and for primary and secondary teachers separately. Note that the horizontal axis represents the highest level of use for the specified list in this case. For example, for all teachers combined, 19 per cent checked level of use four as the highest use level amongst the specified list, 43 per cent checked level five and 13 per cent checked level six. For secondary teachers, the equivalent figures for these three levels were 12, 44 and 17 respectively. For primary teachers the parallel figures were 26, 42 and nine per cent respectively. From these values, it is easily seen that about three quarters of all responses for Depth 1 fell within these three levels. Only 11 per cent of all teachers reported level eight as the highest level of influence. Many more secondary than primary teachers reported level eight as the highest level of influence (16 per cent versus six per cent).

The mean level of response was 5.28 for the teachers combined, 5.63 for secondary and 4.94 for primary teachers. A two-tailed test showed that the difference in Depth 1 between secondary and primary teachers was significant at the one percent level.

A parallel analysis was undertaken for the extended list, the index was labelled Depth 2.

- Depth 2 is the highest level of use indicated by each respondent across the extended list of publications.



Teacher Group	Mean	Standard Deviation	t
Combined	5.66	1.40	
Secondary	5.86	1.37	<.01
Primary	5.47	1.41	

Note: t-test between secondary and primary teachers is two-tailed.

N=415, 208 secondary, 207 primary

Levels of use specified in Column B of Table 2.

Figure 4. Depth 2. Highest Level of Use (Extended List).

Thus the index Depth 2 indicated the impact of the single most influential publication from the extended list for each teacher.

Statsitics for the index Depth 2 are outlined in Table 4. The mean level of use was 5.66 for all teachers, 5.86 for secondary teachers and 5.47 for primary teachers. The standard deviations for the groups were almost identical. The modal level was five ("I regularly read a number of articles from this publication").

The impact on reading depth of the nine journal categories added to the specified list can be deduced by comparing Figures 3 and 4. Far fewer teachers remained in levels one, two and three; more fell into the top three categories when the specified list was upgraded to the extended list. The percentage in these three categories combined increased from 32 to 44 per cent. There was a consequent increase in mean level for all teachers, and for both secondary and primary teacher groups. However the mode remained at level five.

When the extended list was considered, there was still a significant difference in the mean highest reading level between secondary and primary teachers. Secondary teachers were more influenced by their most favoured publication than were their colleagues in primary schools.

Academic Bias

Pelz (1978), in the context of knowledge use by bureaucratic decision makers, has commented on the differences between two broad types of information. One type is hard knowledge, "research based, usually quantitative and couched in scientific language." The other is soft knowledge, "non research based, qualitative and couched in lay language." Pelz (1978) notes that sharp distinction cannot be made in many cases. He argues that information should be graded rather than placed in either one of two dichotomous classes. From an analysis of written educational materials here, this seemed to be the case. The seven publications used in the specified list in this study varied not only in the research base of the data presented, but also in the format and language of presentation.

It was of interest then to examine whether there was a preference for

Table 2. Academic Bias Scores.

	Combined	Secondary	Primary	t
mean	34.2	34.9	33.5	
s.d.	10.4	10.2	10.6	ns
range	13→83	17→83	13→67	

Note: minimum possible score: 104

t-test between secondary and primary teacher responses (two-tailed)

hard knowledge by teachers in secondary over primary schools. To carry this out, an index we label "academic" was created using information collected from teachers in the study.

. Academic is the extent to which teachers favour the use of "hard" knowledge forms in their reading habits. By "hard" knowledge forms is meant knowledge which is presented in research based modes, couched in formal scientific language.

The index was created by weighting the contribution of levels of use from the following publications:

A	Australian Journal of Education	(weight 3)
B	Curriculum and Research Bulletin	(weight 3)
C	SET Research Information for Teachers	(weight 2)
D	Education News	(weight 2)
E	Subject Association Journal	(weight 1)
F	Education Magazine	(weight 1)
G	Education Age	(weight 1)

This was based on the contention that the information contained in publication A and B was "harder" than that of information in publication C and D. Similarly it was assumed that information contained in publication E, F and G was "softer" than that contained in publication C and D. Decisions on relative "hardness" of the information was based on an analysis of the content of each publication over a series of issues.

With these weightings applied to the level of use for each publication, the minimum possible score for a respondent was 104. The mean and standard deviation for all teachers, those in secondary schools and those in primary schools are shown in Table 2. The mean scores for all teachers, and for primary and secondary teachers separately were all about 34, less than one third of the possible score. This in conjunction with the data in Table 1 supported the contention that teachers tended to favour "soft" knowledge over "hard" knowledge in their reading of new knowledge. A t-test for differences between academic bias in the reading habits of primary and secondary teachers showed no significant difference (at the one percent level). This is an interesting result in view of the widespread belief that teachers in secondary schools, by virtue of their training and occupation,

Table 3. Research Use of Publications to Research a Topic

	Combined %	Secondary %	Primary %	t
Not at All	30	26	35	
Once or Twice	36	38	34	
Three to Five Times	17	18	15	
More than Five Times	17	18	16	
	100	100	100	ns

Item: Apart from use of publications as they become available, you may have consulted journals in the process of researching a topic. In this case you probably consulted back issues as well as current volumes.

Please indicate the extent to which you have used research publications to research a topic during the last 12 months.

Note: Figures in the body of the Table are percentages.

t-test between secondary and primary teacher responses (two-tailed).

have more inclination and need to read "hard" information than do their contemporaries in the primary teaching service.

Research on a Topic

We recognised that it was likely that some teachers would need to use publications to research a topic of interest rather than read widely across a range of journals with varying themes and emphases. Consequently, an index (Research) was developed which took into account this form of investigation into written information.

. Research is the extent to which a respondent had undertaken literature searches devoted to a topic of relevance to his work in schools, during the 12 month period before data collection.

An item was consequently included on the teacher questionnaire which enabled an analysis of patterns of literature searches to be undertaken. The patterns of responses for all teachers, and secondary and primary teacher subgroups are presented in Table 3.

About one third of all respondents carried out some investigation of written data bases. A similar proportion did not carry out such an investigation. The distribution of responses across secondary teachers and primary teachers was similar. There was no significant difference in the distribution between the teacher subgroups.

Knowledge Obtained from Non Written Sources

In addition to new knowledge presented in written form, a potentially important means of informing teachers about research and evaluation is through interaction activities. Conferences, seminars and refresher courses are traditional forums for keeping those in the professions up to date; recently they have become far more important to educators. The nature of such programs for teachers has recently been the subject of intensive analysis, and there is currently much research in progress designed to provide answers as to how to make inservice work more effective.

In this study, the major concern was with the use of forums to

disseminate recent evaluation and research results, whether the evaluation and research had been done by an outside individual or group, or by a teacher or teacher group. Questionnaire responses were used to determine teacher participation in forums of this nature. We realised that a seminar or conference may not be totally devoted to the discussion of evaluation or research. Hence we asked teachers in the sample to tell us how often they attended seminars or conferences at which there was at least in part, a discussion of evaluation and research.

Three indices were related to such activities. The first was In School Forums. For this study an

. In School Forum is a conference, seminar, or staff meeting at which there is, at least, in part the discussion of educational research (or evaluation). This Forum took place in the teacher's school.

We asked teachers to tell us whether or not, and how often, in 1981, had they been involved in an In School Forum. Sixty per cent said that they had attended a Forum in 1981. For those who had taken part, the number of Forums attended ranged from one to 15, the mean was 3.4 and the mode 1.0. We also asked whether or not a visiting speaker was involved. Generally, this was the case. Only nine percent of those who had attended an In School Forum in 1981 said that no visiting speaker attended. There is clearly a reliance on expertise outside the school to provide guidance for discussion on evaluation/research matters related to schooling.

The second index related to activities outside the school. For this study an

. Out of School Forum is a conference, seminar or lecture at which there is, at least in part, the discussion of educational research (or evaluation). This Forum took place outside the teacher's school.

In 1981, 52 per cent of all teachers attended an Out of School Forum. The number of Forums attended varied from one to 21. We suspect those few teachers who told us that they attended 10 or more such Forums (10 per cent) counted the discussion of research and evaluation in formal courses for additional qualifications (just under one quarter of the sample were currently engaged in some form of tertiary study).

The third index was related to teacher involvement in research and

Table 4. Participation in Forums and Working Groups: 1981

		Combined %	Secondary %	Primary %	
Participation during 1981;					
at all three types of activity (A, B, C).		15	16	14	
at two of three types of activity (A, B, C).		30	27	33	
at one of three types of activity (A, B, C).		29	29	30	
at none of these activities.		26	29	23	
		100	100	100	
total number of activities in all three types of activity (A, B, C).	$\bar{x}$	4.8	4.2	5.3	
	SD	9.3	10.7	7.5	ns

A: In School Forum
B: Out of School Forum
C: Working Group

evaluation activities. For this study a

. Working Group Activity is the participation of a teacher in a research study the results of which are to be reported to other teachers.

The Working Group Activity may have been located within the confines of one school to service something like a School Review, or it may have been district or even state wide. One quarter of all teachers said that they had been involved in such an activity in 1981. A content analysis revealed a large range of working group tasks. The most likely activities were: participating in a working group outside the school, planning or developing a subject area curriculum, and reviewing research and evaluation related to an aspect of schooling or education.

A summary of the involvement of teachers in the two forums and the working groups is included in Table 4. These data show that there were a group of teachers, 15 percent who were involved in at least one activity in each of areas measured by an index. Thirty per cent were involved in at least two of the three areas measured by an indice, 29 per cent were involved in one indice area, and 26 per cent were not involved. Percentages in each of these categories were similar for teachers in secondary and primary schools.

By summation, it was possible to determine the total commitment of each teacher to involvement in seminars etc., designed to inform teachers about recent research and evaluation knowledge. On average, each teacher attended or took part in about five such activities in 1981. The mean level of involvement of primary and secondary teachers is also listed in Table 4. Given the wide variation in participation between teachers, it is not surprising that the standard deviation of number of activities is large. There was no significant difference in level of participation between teachers in secondary and primary schools.

Conclusion

We have developed nine indices to map the use of educational knowledge by teachers. The emphasis has been on knowledge of a conceptual nature, knowledge which has largely been derived from the findings of research and

evaluation. We have examined two major forms for the diffusion of this information. The first is the written form, in journals and booklets. The second is the verbal form, through conferences and seminars. The expectation that teachers should become more aware and knowledgeable through the accumulation of information of this nature stems from an assumption about teacher roles in school based control of curriculum. We are not, at this stage, prepared to make judgements about these roles, and therefore about the importance of using externally produced information. Here, we are only prepared to comment on the levels of use which have emerged from the analyses.

A major difficulty in making such comments is that there appears to be little basis for comparison. We were unable to find other studies in which the use of conceptual knowledge was examined. We are thus limited to a discussion based on internal comparisons.

In the most general terms, it is evident that a majority of teachers do not read widely. When they do, the more informal style of presentation is strongly preferred. Written material, such as that offered in subject association journals, seems to be used more than material of a more esoteric nature. Knowledge derived from reading was not seen by teachers to have a strong direct impact on their work.

Teachers were quite heavily involved in activities in which research/evaluation knowledge was presented. Within school and externally based conferences were attended by a majority of teachers in the 12 month period before data collection. Although we have no qualitative data on these events, the fact that many teachers attended many of these forums in the space of a year, suggests that they have a high perceived value to the profession.

The analyses also suggests that there are no great differences in the knowledge utilization patterns between teachers in primary and secondary schools. There is a slight difference in favour of secondary teachers in depth of reading of preferred journals. Teachers in the two school levels read to the same breadth, prefer journals of the same type, do research to the same extent, and attend forums and working groups to a similar degree.

The data presented here should serve as a benchmark for future

discussions about knowledge utilization of this type. To date, there has been little attempt to encourage teacher use of conceptual knowledge by system level authorities. When, and if a concerted effort in this direction is made, we will be in a position to compare the reaction of teachers to these forms of diffusion to those which existed in 1981.

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